

# Elements Project Guide

to LEED [Leadership in Energy and Environmental Design] Green Building Rating System - Version 2.0 (March 2000)

by the US Green Building Council

<b>Key:</b>	<b>save</b> = anticipated initial cost savings <b>none</b> = no additional premium <b>\$</b> = short term payback (1-2 years) <b>\$\$</b> = long term payback (2-10 years) <b>\$\$\$</b> = significant premium	<b>SD</b> = schematic design <b>DD</b> = design development <b>CDs</b> = construction documents <b>CA</b> = construction administration <b>POE</b> = Post occupancy evaluation	<b>LA</b> = Landscape Architect <b>CE</b> = Civil Engineer <b>MEP</b> = Mechanical, Electrical & Plumbing Engineers <b>IAQ</b> = Indoor Air Quality Expert or Building Scientist <b>NOTE: Critical design phase is bold</b>	<b>SE</b> = Structural Engineer <b>EE</b> = Electrical Engineer <b>ME</b> = Mechanical Engineer
-------------	--	--	---	---

	PTS	CREDITS	INTENT	LEED CREDIT REQUIREMENTS (see LEED v2.0 March 2000)	TECHNOLOGY / STRATEGIES	DOCUMENTATION REQUIREMENTS (see LEED v2.0 Submittal Summary)	REFERENCED STANDARDS (LEED v 2.0 List of Referenced Standards)	CONSULTANTS	FORM GIVE	LEVEL OF DIFFICULTY	\$	CRITICAL DESIGN PHASE	YES	?	NO
<b>SUSTAINABLE SITES</b>															
SS PRE- REQ	0	EROSION AND SEDIMENTATION CONTROL	Control erosion to reduce negative impacts on water and air quality	<i>Prevent loss of soil, protect topsoil for reuse, prevent sedimentation of storm sewers and receiving streams and air pollution with dust and particulate matter during</i>	silt fencing, sediment traps, construction phasing, stabilization of steep slopes, maintaining or providing vegetated ground cover	Declaration & Erosion Control Plan (or drawings & specifications)	EPA's Storm Water Management for Construction Activities, EPA Document No. EPA-8333-R-92-001 (Chapter 3) or Local Code	CE, LA	No	Easy	none	<b>CDs &amp; CA</b>	X		
SS 1.0	1	SITE SELECTION	Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site	<i>Do not develop buildings on prime agricultural land (Farmland Trust), in a flood plain (less than 5' above FEMA 100 year flood), on land that provides habitat for species on the Federal or State endangered / threatened list, Within 100 feet of a wetland AND prior public parkland</i>	Influence Site Selection & conceptual design.	Declaration	Farmland Trust, FEMA flood plain definition, Federal or State Threatened or Endangered species list, 40 CFR Part 230-233 and Part 22 <a href="http://www.access.gpo.gov/nara/">www.access.gpo.gov/nara/</a> or State Law	CE, LA, Ecologists	No	Easy	none	<b>Site Select</b>	1		
SS 2.0	1	URBAN REDEVELOPMENT	Channel development to urban areas with existing infrastructure, protecting greenfields and preserving habitat and natural resources	<i>Increase localized density by building in areas with minimum development density of 60,000 SF/A (2 story downtown development)</i>	Influence Site Selection & conceptual design.	Provide an area plan with calculated development density	None	None	No	Easy	none	<b>Site Select</b>		1	
SS 3.0	1	BROWNFIELD REDEVELOPMENT	Rehabilitate damaged sites where development is complicated by real or perceived environmental contamination, reducing pressure on undeveloped land	<i>Develop on a site classified as a brownfield and provide remediation as required</i>	Influence Site Selection & participate in EPA Brownfield Redevelopment Program	Provide a letter from a local regulatory agency or EPA confirming the site is a brownfield site. Document remediation efforts.	EPA OSWER Directives 9610.17 <a href="http://www.epa.gov/swerust1/directiv/od961017.html">www.epa.gov/swerust1/directiv/od961017.html</a> , ASTM Standard Practice E1739-95e1 Standard Guide for Risk-based Corrective Action Applied a	EPA, Local municipalities & TIF officials	No	Easy	none	<b>Site Select</b>		1	
SS 4.1	1	ALTERNATIVE TRANSPORTATION	Reduce pollution and land development impacts from automobile use	<i>Locate building within ½ mile of rail station or ¼ mile of 2 or more bus lines</i>	Influence Site Selection	Provide an area plan with transportation features and distances	None	CE	No	Easy	none	<b>Site Select &amp; Planning</b>	1		
SS 4.2	1	ALTERNATIVE TRANSPORTATION	same as above	<i>Provide bike security and shower facilities for 5% of occupants</i>	Influence Program & Site Development	Provide site drawing & plan highlighting bike features	None	CE, LA	Yes	Easy	none	<b>Program &amp; SD</b>	1		
SS 4.3	1	ALTERNATIVE TRANSPORTATION	same as above	<i>Install alternative fuel refueling station for 3% of vehicles (separately ventilate if required)</i>	Influence site development	Provide site drawing and Specifications and occupancy calculations for alternative fueling stations & venting	None	CE	No	Easy	none	<b>Site Planning &amp; SD &amp; CD</b>	1		
SS 4.4	1	ALTERNATIVE TRANSPORTATION	same as above	<i>Size parking capacity not to exceed local zoning AND preferred parking for carpools for 5% of occupants, OR add no new parking for rehabs AND preferred parking for</i>	Influence site development	Provide design narrative, parking capacity plans), local zoning requirements, and document carpool plan.	None	CE	No	Easy	save	<b>Site Planning &amp; SD &amp; CD</b>	1		

## Elements Project Guide

10/15/2001

to LEED [Leadership in Energy and Environmental Design] Green Building Rating System - Version 2.0 (March 2000)  
by the US Green Building Council

	PTS	CREDITS	INTENT	LEED CREDIT REQUIREMENTS (see LEED v2.0 March 2000)	TECHNOLOGY / STRATEGIES	DOCUMENTATION REQUIREMENTS (see LEED v2.0 Submittal Summary)	REFERENCED STANDARDS (LEED v2.0 List of Referenced Standards)	CONSULTANTS	FORM GIVEN	LEVEL OF DIFFICULTY	\$	CRITICAL DESIGN PHASE	YES	?	NO
SS 5.1	1	REDUCED SITE DISTURBANCE	Conserve existing natural areas and restore damaged areas to provide habitat and promote diversity	On greenfield sites, limit earthwork (40 feet beyond building perimeter, 5 feet beyond primary roadway curbs, walkways and main utility branch, and 25 feet beyond pervious paving areas); OR on previously developed sites, restore a minimum of 50% of the remaining open area by planting native or	Show construction boundaries on site plans and specifications, Establish a fine for loss of protected trees, Used Paved areas for construction staging area, work with extension services for native plant species	Provide site drawings and specifications showing restrictions, provide a narrative describing restoration efforts & calculations for 50% restoration.	None	CE, LA, Ecologists	Yes	Easy	\$	Site Selection, Planning, SD & CD	1		
SS 5.2	1	REDUCED SITE DISTURBANCE	same as above	Reduce the development footprint (building, access roads, & parking) to exceed local zoning's open space requirements by 25%	Tighten Program, stack program	Provide local zoning requirements for open spaces, Provide site drawing with area calculations showing 25% better than required, OR area equal to building footprint, plus	None	CE, LA	Yes	Moderately Difficult	none	Site Planning, Program, & SD	1		
SS 6.1	1	STORMWATER MANAGEMENT	Limit disruption of natural water flows by minimizing storm water runoff, increasing on-site infiltration and reducing contaminants	No net increase in runoff from existing to developed conditions OR, if existing imperviousness is greater than 50% decrease runoff by 25%	Reduce impervious surfaces, maximized on site storm management, capture rainwater, use green roofs	Provide pre construction & post construction site drawings with area calculations, OR Provide a storm water management plan	None	CE, LA	Yes	Moderately Difficult	none	Site Planning, SD, CD	1		
SS 6.2	1	STORMWATER MANAGEMENT	same as above	Treatment systems designed to remove 80% of the average annual post development total suspended solids (TSS) and 40% of the average annual post development total phosphorous (TP), by implementing Best Management	Use wetlands, storm water filtration systems, bioswales, bio-retention basins, and vegetated filter strips.	Provide drawings and specifications describing EPA's Best Management Practices implemented. Provide calculations.	EPA's Guidance Specifying Management Measures for Sources of Non-point Pollution in Coastal Waters <a href="http://www.epa.gov/owow/nps/MMGI/">www.epa.gov/owow/nps/MMGI/</a> (EPA 840-B-92-002 1/93)	CE, LA	Yes	Difficult	\$\$\$	Site Planning & SD & CD	1		
SS 7.1	1	LANDSCAPE AND EXTERIOR DESIGN TO REDUCE HEAT LOADS	Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat	Provide shade on 30% of non-roof impervious surface OR, use light-colored / high-albedo materials (reflectance of 0.3) for 30% of the site's non-roof impervious surfaces OR place 50% parking underground OR use less than 50% impervious paving over 50% of parking area	Employ design strategies, materials & Landscaping that will reduce heat absorption - shade & vegetated surfaces.	Provide drawing showing five year shading plan with area calculations, OR Provide specifications & cut sheets for high-albedo materials as well as area calculations, OR Provide Underground Parking plan Or Provide drawings and	None	CE, LA	Yes & No	Easy	\$\$	Site Select, Planning, SD, Material Selection, CDs	1		
SS 7.2	1	LANDSCAPE AND EXTERIOR DESIGN TO REDUCE HEAT LOADS	same as above	Use ENERGY STAR Roof compliant, high reflectance AND low emissivity roofing (initial reflectance of at least .65 and three-year-aged reflectance of at least 0.5 when tested according to ASTM E408) for 75% of roof	Use green roofs or light colored roofs	Provide specifications & cut sheets for Energy Star roofing as well as area calculations, OR Provide specifications and cut sheets with vegetated roof system as well as area calculations.	EPA Energy Star Roofing Guidelines <a href="http://www.epa.gov/appdstar/roofin/specs.htm">www.epa.gov/appdstar/roofin/specs.htm</a> , ASTM E903 & ASTM E408-71 (1996)e1 <a href="http://www.astm.org">www.astm.org</a>	ME, SE	Yes	Moderately Difficult	\$\$	SD, CDs			1
SS 8.0	1	LIGHT POLLUTION REDUCTION	Eliminate light trespass from the building site, improve night sky access, and reduce development impact on	Do not exceed IESNA footcandle levels AND design interior and exterior lighting such that zero direct-beam illumination leaves the	Ambient lighting for pre curfew hour ranges from .01 fc & 1.5 fc. Minimize lighting of architectural & landscape	Provide design narrative and plan for exterior lighting, demonstrate the lighting quality.	IESNA Recommended Practice Manual: Lighting for Exterior Environments (RP-33-99) <a href="http://www.iesna.org">www.iesna.org</a>	EE	No	Easy	save	DD & CDs	1		
SUM	14	Possible										Total Sustainable Site Pnts	9	4	1

## WATER EFFICIENCY

Elements

Schematic Design 15 June 2001  
DNR Green Office Building

LEED Project Rating 6.6.1

## Elements Project Guide

to LEED [Leadership in Energy and Environmental Design] Green Building Rating System - Version 2.0 (March 2000)  
by the US Green Building Council

	PTS	CREDITS	INTENT	LEED CREDIT REQUIREMENTS (see LEED v2.0 March 2000)	TECHNOLOGY / STRATEGIES	DOCUMENTATION REQUIREMENTS (see LEED v2.0 Submittal Summary)	REFERENCED STANDARDS (LEED v2.0 List of Referenced Standards)	CONSULTANTS	FORM GIVEN	LEVEL OF DIFFICULTY	\$	CRITICAL DESIGN PHASE	YES	?	NO
WE 1.1	1	WATER EFFICIENT LANDSCAPING	Limit or eliminate the use of potable water for landscape irrigation	Use high-efficiency irrigation technology OR use captured rain or recycled site water to reduce potable water usage for irrigation by 50% over conventional methods	Create a water use baseline, specify water-efficient, native or adapted plantings, Use high efficiency irrigation technologies including: micro irrigation, moisture sensors, weather data based controllers. Use rainwater, gray water or on-site treated	Provide cut sheet for high efficiency irrigation equipment. Include calculations. OR Provide drawings and a narrative describing the captured rain system or recycled site water system including calculations.	LEED Reference Guide	CE, LA, ME	Yes	Easy	\$\$	Site Planning, SD & CD's	1		
WE 1.2	1	WATER EFFICIENT LANDSCAPING	same as above	Use only captured rain or recycled site water for additional 50% (100% total) reduction in site irrigation water needs OR do not install permanent irrigation system	same as above	Provide Drawings and narrative describing the captured rain or recycled site water system with the capacity calculations included, OR describe why permanent irrigation system is not required.	None	CE, LA, ME	No	Easy	\$\$	Site Planning, SD & CD's	1		
WE 2.0	1	INNOVATIVE WASTEWATER TECHNOLOGIES	Reduce generation of wastewater and potable water demand, while increasing local aquifer recharge	Reduce use of municipally provided water for sewage conveyance by 50% OR treat 100% of wastewater on site	Create a water use baseline, Implement decentralized on-site wastewater treatment & reuse system, Use gray or black water systems, Reuse water, Use wetlands, mechanical recirculating sand	Provide narrative of measures implemented including calculations, OR Provide drawings, specifications and a narrative demonstrating water treatment method. Include letter from local health	Local Health Codes & LEED Reference Guide	CE, ME	Yes	Difficult	\$\$\$	Site Planning, SD & CD's		1	
WE 3.1	1	WATER USE REDUCTION	Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems	Employ strategies that use 20% less water than water use baseline calculate for the building (not including irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements.	Create a water use baseline including all water consuming fixtures, equipment & seasonal conditions. Specify water conserving and ultra high efficiency or dry fixtures, equipment & control technologies. Use storm water & alternatives to potable water for sewage convenience.	Provide cut sheet for all water consuming fixtures with performance compliance. Provide a water budget calculation showing a reduction calculation	LEED Reference Guide, Energy Policy Act 1992 <a href="http://energy.nfesc.navy.mil/law_us/92epact/confcom.htm">energy.nfesc.navy.mil/law_us/92epact/confcom.htm</a>	CE, ME	Yes	Moderately Difficult	\$\$	SD & CD's	1		
WE 3.2	1	WATER USE REDUCTION	same as above	Exceed the potable water use reduction by an additional 10% (30% total efficiency)	same as above	same as above	same as above	CE, ME	Yes	Difficult	\$\$	SD & CD's		1	
<b>SUM</b>	<b>5</b>	<b>Possible</b>								<b>Total Water Efficiency Points</b>			<b>3</b>	<b>2</b>	<b>0</b>

**ENERGY AND ATMOSPHERE**

EA PRE-REQ	0	FUNDAMENTAL BUILDING SYSTEMS COMMISSIONING	Verify and ensure that fundamental building elements and systems are designed, installed and calibrated to operate as intended	Implement all the following commissioning procedures: engage commissioning authority; develop design intent and basis of design documentation; include requirements in construction documents; develop and use commissioning plan; verify installation, performance, training	Coordinate with all consultants, tie contractor final payments to documented system performance.	Provide a commissioning plan & a signed letter of certification by the commissioning authority	LEED Reference Guide, Bonneville Power Administration Building Commissioning Guidelines <a href="http://www.bpa.gov">www.bpa.gov</a> , PEI Model Building Commissioning Plan & Guide Specifications <a href="http://www.peci.org/CX/mcpgs.html">www.peci.org/CX/mcpgs.html</a>	MEP, IAQ & Commissioning Agent	No	Moderately Difficult	\$	DD, CDs, CA & POE	X		
EA PRE-REQ	0	MINIMUM ENERGY PERFORMANCE	Establish the minimum level of energy efficiency for the base building and systems	Design energy efficiency to meet ASHRAE/IESNA 90.1-1999 or local code, which ever is more stringent. Analyze expected baseline building performance using the	Review codes, coordinate goals, & document compliance	Provide a code analysis & summary table demonstrating compliance, OR a copy of the Energy Cost Budget Compliance Report	LEED Reference Guide, ASHRAE Standard 90.1-1999 Energy Standard for Buildings Except Low-Rise Residential Buildings <a href="http://www.ashrae.org">www.ashrae.org</a>	MEP & IAQ	No	Easy	none to save	DD, CDs, CA & POE	X		

# Elements Project Guide

to LEED [Leadership in Energy and Environmental Design] Green Building Rating System - Version 2.0 (March 2000)  
by the US Green Building Council

	PTS	CREDITS	INTENT	LEED CREDIT REQUIREMENTS (see LEED v2.0 March 2000)	TECHNOLOGY / STRATEGIES	DOCUMENTATION REQUIREMENTS (see LEED v 2.0 Submittals Summary)	REFERENCED STANDARDS (LEED v 2.0 List of Referenced Standards)	CONSULTANTS	FORM GIVE P	LEVEL OF DIFFICULTY	\$	CRITICAL DESIGN PHASE	YES	?	NO
EA PRE- REQ	0	CFC REDUCTION IN HVAC&R EQUIPMENT	Reduce ozone depletion	Zero use of CFC-based refrigerants in building OR complete comprehensive phaseout in existing building	Specify proper equipment	Provide equipment schedules & cut sheets OR Provide a listing of all existing HVAC&R components and a copy of the phase out plan describing the	None	MEP	No	Easy	none	DD, CDs, CA	X		
EA 1.1	2	OPTIMIZE ENERGY PERFORMANCE	Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use	Reduce design energy cost compared to the energy cost budget for regulated energy components described in ASHRAE/IESNA Standard 90.1-1999, as demonstrated by a whole building simulation using the Energy Cost Budget Method ... by 20% in new	Regulate energy components for passive systems, HVAC systems, building envelope, service hot water, lighting & other regulated systems. Use building modeling and analysis against a base case of minimum prerequisites	Provide an narrative demonstrating energy saving methods using the energy cost budget method against the base case. Provide a signed copy of the Energy Cost Budget Compliance Form.	LEED Reference Guide, ASHRAE Standard 90.1-1999 Energy Standard for Buildings Except Low-Rise Residential Buildings <a href="http://www.ashrae.org">www.ashrae.org</a>	MEP & IAQ	Yes	Moderately Difficult	save to \$	DD, CDs, CA & POE	2		
EA 1.2	2	OPTIMIZE ENERGY	same as above	... by 30% in new building, by 20% in existing building	same as above	same as above	same as above	MEP & IAQ	Yes	Moderately Difficult	save to \$	DD, CDs, CA &	2		
EA 1.3	2	OPTIMIZE ENERGY	same as above	... by 40% in new building, by 30% in existing building	same as above	same as above	same as above	MEP & IAQ	Yes	Difficult	save to \$	DD, CDs, CA &	2		
EA 1.4	2	OPTIMIZE ENERGY	same as above	... by 50% in new building, by 40% in existing building	same as above	same as above	same as above	MEP & IAQ	Yes	Difficult	save to \$	DD, CDs, CA &	2		
EA 1.5	2	OPTIMIZE ENERGY	same as above	... by 60% in new building, by 50% in existing building	same as above	same as above	same as above	MEP & IAQ	Yes	Extremely Difficult	save to \$	DD, CDs, CA &	2		
EA 2.1	1	RENEWABLE ENERGY	Encourage and recognize increasing levels of self-supply through renewable technologies to reduce environmental impacts associated with fossil fuel energy use	Supply ... 5% ... of building's total energy through use of on-site renewable energy systems (expressed as a fraction of annual energy cost) inc. high temperature solar, geothermal, wind, biomass and biogas; not passive solar, solar hot water heating, ground	Utilize high temperature solar, geothermal, wind, biomass and biogas	Provide drawings, cut sheets, and specifications as well as calculations.	None	MEP	Yes	Moderately Difficult	\$	DD, CDs, CA & POE	1		
EA 2.2	1	RENEWABLE ENERGY	same as above	... 10% ...	same as above	same as above	same as above	MEP	Yes	Difficult	\$	DD, CDs, CA &	1		
EA 2.3	1	RENEWABLE ENERGY	same as above	... 20% ...	same as above	same as above	same as above	MEP	Yes	Difficult	\$	DD, CDs, CA &	1		
EA 3.0	1	ADDITIONAL COMMISSIONING	Verify and ensure that the entire building is designed, constructed, and calibrated to operate as intended	Implement the following additional commissioning tasks: Focused review prior to CD; focused review at 95% CD; selective review of submittals; develop system and energy management manual; have contract in place for near-warranty end or post-occupancy review (items 1-3 must be performed by	Coordinate with all consultants, tie contractor final payments to documented system performance.	Provide an excerpt from the commissioning plan, a signed letter of certification by an independent commissioning authority.	LEED Reference Guide, Bonneville Power Administration Building Commissioning Guidelines <a href="http://www.bpa.gov">www.bpa.gov</a> , PECI Model Building Commissioning Plan & Guide Specifications <a href="http://www.peci.org/CX/mcpgs.html">www.peci.org/CX/mcpgs.html</a>	MEP, IAQ & Commissioning Agents)	No	Difficult	\$	DD, CDs, CA & POE	1		
EA 4.0	1	ELIMINATION OF HCFCs AND HALONS	Reduce ozone depletion and support early compliance with the Montreal Protocol	Install base building HVAC and refrigerant equipment and fire suppression systems that do not contain HCFCs or Halon	Specify alternative equipment	Provide a letter from the architect or engineer as well as cut sheets	LEED Reference Guide	MEP	No	Extremely Difficult	\$\$\$	SD, CDs, CA			1

## Elements Project Guide

10/15/2001

to LEED [Leadership in Energy and Environmental Design] Green Building Rating System - Version 2.0 (March 2000)  
by the US Green Building Council

	PTS	CREDITS	INTENT	LEED CREDIT REQUIREMENTS (see LEED v2.0 March 2000)	TECHNOLOGY / STRATEGIES	DOCUMENTATION REQUIREMENTS (see LEED v 2.0 Submittals Summary)	REFERENCED STANDARDS (LEED v 2.0 List of Referenced Standards)	CONSULT ANTS	FORM GIVE P	LEVEL OF DIFFICULTY	\$	CRITICAL DESIGN PHASE	YES	?	NO
EA 5.0	1	MEASUREMENT AND VERIFICATION	Provide for the ongoing accountability and optimization of building energy and water consumption performance over time	Comply with continuous metering requirements stated in Option B for the following: lighting systems and controls; constant & variable motor loads; variable frequency drive operation; chiller efficiency at variable loads (kW/ton); cooling load; air/water economizer and heat recovery cycles; air distribution static pressures and ventilation air volumes; boiler efficiencies; building specific energy efficient systems/equipment; indoor water	Coordinate with all consultants, Install necessary monitoring & verification systems, tie contractor final payments to documented system performance.	Provide a copy of the Measurement and Verification Plan as well as a schedule of instrumentation controls for each category, provide cut sheets for sensors and data collection systems.	USDOE International Performance Measurement and Verification Protocol, Option B: Methods by Technology <a href="http://www.ipmvp.org">www.ipmvp.org</a>	MEP & IAQ	No	Difficult	\$\$	SD, CD's, CA & POE		1	
EA 6.0	1	GREEN POWER	Encourage the development and use of grid-source, renewable energy technologies on a net zero pollution basis	Engage in two year contract to purchase power generated from renewable sources that meet the Center for Resource Solutions Green-E requirements (solar, wind, geothermal, biomass, or low-impact	Purchase grid power from a responsible source like Green Power & Power Makers & Low Impact Hydropower Certification Program	Provide a copy of the two year contract as well as documentation demonstrating compliance	Center for Resource Solutions (CRS) Green-E Requirements <a href="http://www.green-e.org/power/require.html">www.green-e.org/power/require.html</a>	MEP & Utility Company	No	Easy	none	SD, CD's, CA & POE			1
<b>SUM</b>	<b>17</b>	<b>Possible</b>							<b>Total Energy &amp; Atmosphere Pts</b>				<b>7</b>	<b>8</b>	<b>2</b>

### MATERIALS AND RESOURCES

MR PRE- REQ	0	STORAGE AND COLLECTION OF RECYCLABLES	Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills	Provide accessible area dedicated to separation, collection and storage of recycling (minimally) paper, glass, plastics and metals	Add recycling collection areas to the program. Where collection bins are used, they should accommodate a 75% diversion rate, easy collection	Provide drawings indicating the collection sites and the path to loading docs as well as calculations of material generated by occupants	None	Recycling service providers	Yes	Easy	none	Program, SD & CDs	X		
MR 1.1	1	BUILDING REUSE	Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste, and reduce environmental impacts of new buildings as they relate to materials manufacturing and	Reuse/Maintain ... 75% ... of existing building structure and shell (exterior skin and framing excluding window assemblies)	Reuse as appropriate the Percentage of the existing building calculated as the total areas (sf) of reused material, divided by the existing total area (sf).	Provide pre & post-construction plans and elevation drawings highlighting reused elements as well as area calculations.	None	MEP & SE	Yes	Moderately Difficult	none	Program, SD, CDs & CA			1
MR 1.2	1	BUILDING REUSE	same as above	Reuse/Maintain ...an additional 25% (100% total) ... of existing building structure and shell (exterior skin and framing excluding	same as above	same as above	same as above	MEP & SE	Yes	Difficult	none	Program, SD, CDs & CA			1
MR 1.3	1	BUILDING REUSE	same as above	Reuse/Maintain ...100% total ... of existing building structure and shell AND 50% non-shell (walls, floor coverings, & ceiling systems)	same as above	same as above	same as above	MEP & SE	Yes	Extremely Difficult	none	Program, SD, CDs & CA			1
MR 2.1	1	CONSTRUCTION WASTE MANAGEMENT	Divert construction, demolition, and land clearing debris from landfill disposal. Redirect recyclable material back to the manufacturing process.	Develop and implement a waste management plan quantifying material diversion by weight. Recycle and/or salvage ... 50% ... of construction, demolition and land clearing waste	The Waste Management Plan should identify licensed haulers, processors, and salvage markets as well as strategies for source reduction, recycling, salvaging or reusing	Provide a copy of the waste management plan as well as calculations of waste diverted.	LEED Reference Guide & Waste Spec	Contractor	No	Moderately Difficult	none	SD, CD's & CA	1		
MR 2.2	1	CONSTRUCTION WASTE MANAGEMENT	same as above	... an additional 25% (75% total) ...	same as above	same as above	same as above	Contractor	No	Difficult	none	SD, CD's & CA		1	

Elements

Schematic Design 15 June 2001  
DNR Green Office Building

LEED Project Rating 6.6.1

## Elements Project Guide

to LEED [Leadership in Energy and Environmental Design] Green Building Rating System - Version 2.0 (March 2000)  
by the US Green Building Council

	PTS	CREDITS	INTENT	LEED CREDIT REQUIREMENTS (see LEED v2.0 March 2000)	TECHNOLOGY / STRATEGIES	DOCUMENTATION REQUIREMENTS (see LEED v 2.0 Submittals Summary)	REFERENCED STANDARDS (LEED v 2.0 List of Referenced Standards)	CONSULTANTS	FORM GIVE P	LEVEL OF DIFFICULTY	\$	CRITICAL DESIGN PHASE	YES	?	NO
MR 3.1	1	RESOURCE REUSE	Extend the life cycle of targeted building materials, reducing environmental impacts related to materials manufacturing and transport.	Specify salvaged or refurbished materials for ... 5% ... of building materials	Calculate total dollars replacement cost of salvaged or refurbished materials, calculate the total dollars of all building materials, determine the percentage of reused to new materials. Exclude labor.	Provide specifications and contractor submittals as well as calculations	None	Contractor	No	Moderately Difficult	none	SD, CD's & CA	1		
MR 3.2	1	RESOURCE REUSE	same as above	... 10% ...	same as above	same as above	same as above	Contractor	No	Difficult	none	SD, CD's & CA	1		
MR 4.1	1	RECYCLED CONTENT	Increase demand for building products that have incorporated recycled content material, reducing the impacts resulting from extraction of new material.	Specify ... 25%... of building materials that contain in aggregate by weight 20% post consumer recycled content material OR 40% post-industrial recycled content material	Calculate total dollars of materials with recycled content, calculate the total dollars of all building materials, determine the percentage of recycled to new materials. Exclude labor, M&E materials & labor, overhead & fees.	Provide specifications and contractor submittals as well as a spread sheet of all materials and their recycled content, and calculated percentages	Leed Reference Guide, Comprehensive Guidelines for Procurement of Products Containing Recovered Materials; Recovered Materials Advisory Notice III; final rule (January 19, 2000) 40 CRF Part 247 <a href="http://www.epa.gov/epaoswer/non-hw/procure/pdf/cpg-fr.pdf">www.epa.gov/epaoswer/non-hw/procure/pdf/cpg-fr.pdf</a> and	Contractor	No	Moderately Difficult	none	SD, CD's & CA	1		
MR 4.2	1	RECYCLED CONTENT	same as above	... an additional 25% (50% total) ...	same as above	same as above	same as above	Contractor	No	Difficult	\$\$\$	SD, CD's & CA	1		
MR 5.1	1	LOCAL/REGIONAL MATERIALS	Increase demand for building products that are manufactured locally, reducing the environmental impacts resulting from transportation, and supporting the local economy.	Specify 20% of building materials that are manufactured within a radius of 500 miles	Calculate total dollars replacement cost of materials that are locally or regionally manufactured, calculate the total dollars of all building materials, determine the percentage of local to total new materials. Exclude labor.	Provide specifications and contractor submittals as well as a spread sheet of all local & regional materials, and calculated percentages	LEED Reference Guide, Contact Local & State waste management boards for informational about regional building materials,	Contractor & Local CSI chapter	No	Moderately Difficult	none	SD, CD's & CA	1		
MR 5.2	1	LOCAL/REGIONAL MATERIALS	same as above	Of these, specify 50% that are extracted, harvested, or recovered within 500 miles	same as above	Provide specifications and contractor submittals as well as a spread sheet of all local & regional materials, and calculated percentages. Include manufacturing information about resource	same as above	Contractor & Local CSI chapter	No	Difficult	none	SD, CD's & CA	1		
MR6.0	1	RAPIDLY RENEWABLE MATERIALS	Reduce the use and depletion of finite raw and long cycle renewable materials by replacing them with rapidly renewable materials.	Specify rapidly renewable building materials for 5% of total building materials (planted and harvested in a 10 year cycle that do not result in significant biodiversity loss, increase erosion, air quality impact and sustainably managed)	Calculate total dollars cost of materials that are considered rapidly renewable, calculate the total dollars of all building materials, determine the percentage of renewable to total new materials. Exclude labor, M&E materials & labor,	Provide specifications and contractor submittals as well as a spread sheet of all rapidly renewable materials, and calculated percentages. Include manufacturing information about rapidly renewable content.	none	Contractor	No	Difficult	\$\$\$	SD, CD's & CA	1		
MR 7.0	1	CERTIFIED WOOD	Encourage environmentally responsible forest management.	Use 50% of wood-based materials certified by Forest Stewardship Council for all permanent wood used as well as temporary formwork used	Comply with FSC guidelines for wood selection	Provide specifications and contractor submittals as well as a spread sheet of all certified wood materials, and calculated percentages. Include manufacturing	Forestry Stewardship Council Guidelines <a href="http://www.fscus.org/define_responsible/principlescriteria/prin_crit.html">www.fscus.org/define_responsible/principlescriteria/prin_crit.html</a>	Contractor	No	Easy	\$\$\$	SD, CD's & CA	1		
SUM	13	Possible								Total Mat. & Resource Pnts			2	8	3

# INDOOR ENVIRONMENTAL QUALITY Elements

Schematic Design 15 June 2001  
DNR Green Office Building

LEED Project Rating 6.6.1

# Elements Project Guide

to LEED [Leadership in Energy and Environmental Design] Green Building Rating System - Version 2.0 (March 2000)  
by the US Green Building Council

	PTS	CREDITS	INTENT	LEED CREDIT REQUIREMENTS (see LEED v2.0 March 2000)	TECHNOLOGY / STRATEGIES	DOCUMENTATION REQUIREMENTS (see LEED v2.0 Submittal Summary)	REFERENCED STANDARDS (LEED v2.0 List of Referenced Standards)	CONSULTANTS	FORM GIVEN	LEVEL OF DIFFICULTY	\$	CRITICAL DESIGN PHASE	YES	?	NO
IEQ PRE- REQ	0	MINIMUM IAQ PERFORMANCE	Establish minimum IAQ performance to prevent the development of indoor air quality problems in buildings, maintaining the health and well being of the occupants.	Meet minimum requirements of ASHRAE 62-1999, Ventilation for Acceptable Indoor Air Quality, and Addenda	Incorporate referenced targets into the plans and specifications, Identify sources of contamination on site, Include operational testing in the building	Provide a letter from the mechanical engineer stating compliance & declare the procedures employed. Include design criteria and assumptions.	ASHRAE 62-1999: Ventilation for Acceptable Indoor Air Quality <a href="http://www.ashrae.org">www.ashrae.org</a>	MEP & IAQ	No	Easy	none	DD, CD's, CA & POE	X		
IEQ PRE- REQ	0	ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL	Prevent exposure of building occupants and systems to Environmental Tobacco Smoke (ETS).	Zero exposure of nonsmokers to ETS by prohibiting smoking in building OR provide designated smoking room meeting containment, capture and removal requirements, including verification according to ASHRAE Standard 129-1997. Prevent ETS from outdoor smoking	Prohibit smoking or follow ASHRAE requirements.	Provide a letter from the building owner with policy and site plan showing outdoor smoking areas. Provide drawings that demonstrate smoking rooms are properly ventilated. Provide a letter from the testing engineer	ASHRAE 129-1997: Measuring Air-Change Effectiveness. <a href="http://www.ashrae.org">www.ashrae.org</a>	MEP & IAQ	No	Easy	save	SD, CD's & POE	X		
IEQ 1.0	1	CARBON DIOXIDE (CO2) MONITORING	Provide capacity for indoor air quality (IAQ) monitoring to sustain long term occupant health and comfort.	Install a permanent carbon dioxide monitoring system that provides feedback on space ventilation performance in a form that affords operational adjustments, AND specify initial operational set point parameters that maintain indoor carbon dioxide levels no higher than outdoor levels by more than 530 parts per million at any time.	Install independent systems of make monitoring a function of the building automation system. Situate monitoring locations in areas with high occupant densities and at the ends of the longest runs of the distribution ductwork. Specify that O&M manuals require calibration as manufacturer recommends, not less than	Provide drawings, specifications, and cut sheets of carbon dioxide monitoring system. Include a narrative describing the sequence of operation and control and the initial operation set point parameters.	None	MEP & IAQ	No	Easy	\$\$	DD, CD's, CA & POE	1		
IEQ 2.0	1	INCREASE VENTILATION EFFECTIVENESS	Provide for the effective delivery and mixing of fresh air to building occupants to support their health, safety, and comfort.	For mechanically ventilated buildings, air change effectiveness greater than or equal to 0.9 (ASHRAE 129-1997); For naturally ventilated spaces, demonstrate a distribution an laminar flow pattern that involves not less than 90% of the room/zone area in the direction of air flow for at least 95% of hours	Increase ventilation effectiveness and prevent short circulating of airflow delivery. Use displacement ventilation, low velocity, and laminar flow ventilation (under floor or near floor delivery) and natural ventilation. Operable windows with an architectural strategy	For Mechanically ventilated space, provide a report summarizing test results, calculations and a design narrative. If air exchange is less than .9 provide documentation indicating the correct design ventilation rate. For naturally ventilated space,	ASHRAE 129-1997: Measuring Air-Change Effectiveness, Appendix B, & ASHRAE Fundamentals Chapter 31 <a href="http://www.ashrae.org">www.ashrae.org</a>	MEP & IAQ	Yes	Moderately Difficult	\$	DD, CD's, CA & POE	1		
IEQ 3.1	1	CONSTRUCTION IAQ MANAGEMENT PLAN	Prevent indoor air quality problems resulting from the construction/renovation process, to sustain long term installer and occupant health and comfort.	Indoor Air Quality Management Plan for the construction and pre-occupancy phases: During construction meet or exceed SMACNA IAQ Guidelines AND protect absorptive materials from moisture damage AND replace air filtration media immediately prior to occupancy. Filtration media must meet ASHRAE 52.2-1999 MERV of 13.	Specify containment control strategies and protect HVAC system, controlling pollutant sources, interrupt pathways for contamination, enforce proper housekeeping & construction scheduling, minimize & control moisture damage. Install Insulation, carpeting, ceiling tiles, gypsum and other absorptive materials in the	Provide a copy of the Construction IAQ Plan highlighting SMACNA IAQ Guidelines during construction, Provide paragraphs of Construction IAQ measures used, Provide cut sheets of filtration media used during construction and replaced before occupancy.	Sheet Metal and Air Conditioning Nation Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under construction, 1995 <a href="http://www.smacna.org">www.smacna.org</a> ASHRAE Standard 52.2-1992: Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size	IAQ, MEP & Contractor	No	Moderately Difficult	\$\$\$	CDs & CA	1		
IEQ 3.2	1	CONSTRUCTION IAQ MANAGEMENT PLAN	same as above	Conduct a two-week building flushout with new filtration media at 100% outside air after construction ends and prior to occupancy OR conduct baseline IAQ testing procedure meeting EPA guidelines	same as above	Provide a letter from architect or engineer describing building flushout procedures and a log of dates. Provide specifications and documentation demonstrating	same as above	IAQ, MEP & Contractor	No	Moderately Difficult	\$\$\$	CDs & CA	1		

## Elements Project Guide

to LEED [Leadership in Energy and Environmental Design] Green Building Rating System - Version 2.0 (March 2000)  
by the US Green Building Council

	PTS	CREDITS	INTENT	LEED CREDIT REQUIREMENTS (see LEED v2.0 March 2000)	TECHNOLOGY / STRATEGIES	DOCUMENTATION REQUIREMENTS (see LEED v 2.0 Submittal Summary)	REFERENCED STANDARDS (LEED v 2.0 List of Referenced Standards)	CONSULTANTS	FORM GIVE P	LEVEL OF DIFFICULTY	\$	CRITICAL DESIGN PHASE	YES	?	NO
IEQ 4.1	1	LOW-EMITTING MATERIALS	Reduce the quantity of indoor air contaminants that are odorous or potentially irritating to provide installer and occupant health and comfort.	Meet or exceed VOC limits for adhesives and sealants referred to in referenced standards	Request and evaluate emissions test data from manufacturers for emissions test data. Specify VOC Limits in all applicable sections of the specifications	Provide cut sheets, MSDS for each sealant used	Adhesives: Southern Coast Air Quality Management District Rule #1168 <a href="http://www.aqmd.gov/rules/html/r1168.html">www.aqmd.gov/rules/html/r1168.html</a> . Sealants: Bay Area Air Resources Board Reg 8, Rule 51 <a href="http://www.baaqmd.gov/regs/rg0851">www.baaqmd.gov/regs/rg0851</a>	Contractor & IAQ	No	Easy	\$\$\$	CDs & CA	1		
IEQ 4.2	1	LOW-EMITTING MATERIALS	same as above	Paints and coatings to meet VOC and chemical component limits of Green Seal requirements	same as above	Provide cut sheets, MSDS for each for coating used	Green Seal Paints & Coatings Requirements (GS-11) First Edition, May 20, 1993 <a href="http://www.greenseal.org/standard/paints/htm">www.greenseal.org/standard/paints/htm</a>	Contractor & IAQ	No	Extremely Difficult	\$\$\$	CDs & CA		1	
IEQ 4.3	1	LOW-EMITTING MATERIALS	same as above	Carpet systems to meet IAQ test program referred to in the referenced standards	same as above	Provide cut sheets, MSDS for each carpet system used	Carpet & Rug Institute Green Label Indoor Air Quality Test Program <a href="http://www.carpet-rug.org">www.carpet-rug.org</a>	Contractor & IAQ	No	Easy	\$\$\$	CDs & CA	1		
IEQ 4.4	1	LOW-EMITTING MATERIALS	same as above	Composite wood or aggrifiber products = no added urea-	same as above	Provide cut sheets, MSDS for each composite wood or	None	Contractor	No	Easy	\$\$\$	CDs & CA	1		
IEQ 5.0	1	INDOOR CHEMICAL AND POLLUTANT SOURCE CONTROL	Avoid exposure of building occupants to potentially hazardous chemicals that adversely impact air quality.	Minimize cross-contamination of regularly occupied areas by chemical pollutants, inc. entryway systems to capture dirt, particulate, etc AND provide areas with structural deck to deck partitions with separate outside exhausting, no air recirculation and negative pressure where chemical use occurs (including housekeeping areas & copy/print rooms) AND provide drains plumbed for appropriate disposal of liquid	Physically isolate activities associated with chemical contaminants, housekeeping, copy/fax/printing, and entryway systems - provide dedicated systems to contain and remove pollutants.	Provide drawings, cut sheets, narratives for each of the areas described.	None	IAQ, MEP	Yes	Difficult	\$\$\$	Program, SD, CDs & CA		1	
IEQ 6.1	1	CONTROLLABILITY OF SYSTEMS	Provide a high level of individual occupant control of thermal, ventilation, and lighting systems to support optimum health, productivity, and comfort conditions.	Provide one operable window and lighting control zone per 200 SF for all occupied areas within 15 feet of perimeter wall	See credit requirement	Provide drawings and cut sheets showing operable windows and lighting controls for perimeter areas of the building. Include calculations.	None	MEP & IAQ	Yes	Difficult	none	SD, CD's & CA		1	
IEQ 6.2	1	CONTROLLABILITY OF SYSTEMS	same as above	Provide controls for each individual for airflow, temperature and lighting for 50% of non-perimeter, regularly occupied areas	Provide individual or integrated controls systems that control lighting, airflow, and temperature in individual rooms and/or work areas. Consider combinations of ambient and task lighting control and operable windows for perimeter and VAV systems	Provide drawings and cut sheets showing airflow, temperature and lighting controls for perimeter areas of the building. Include calculations.	None	MEP & IAQ	Yes	Moderately Difficult	\$\$\$	DD, CD's & CA	1		
IEQ 7.1	1	THERMAL COMFORT	Provide for a thermally comfortable environment that supports the productive and healthy performance of the building occupants.	Comply with ASHRAE 55-1992, Addenda 1995, for thermal comfort standards including humidity control within established ranges per climate zone.	Integrate envelope and HVAC systems design to achieve desired comfort conditions.	Provide a letter from the Mechanical Engineer confirming compliance. Include design criteria and assumptions for thermal comfort including temperature,	ASHRAE Standard 55-1992. Addenda 1995 thermal Environmental conditions for Human Occupancy including ANSI/ASHRAE Addendum 55a-1995 <a href="http://www.ashrae.org">www.ashrae.org</a>	MEP & IAQ	Yes	Easy	none	DD, CD's, CA & POE	1		



# Elements Project Guide

to LEED [Leadership in Energy and Environmental Design] Green Building Rating System - Version 2.0 (March 2000)  
by the US Green Building Council

	PTS	CREDITS	INTENT	LEED CREDIT REQUIREMENTS (see LEED v2.0 March 2000)	TECHNOLOGY / STRATEGIES	DOCUMENTATION REQUIREMENTS (see LEED v 2.0 Submittals Summary)	REFERENCED STANDARDS (LEED v 2.0 List of Referenced Standards)	CONSULT ANTS	FORM GIVE P	LEVEL OF DIFFICULTY	\$	CRITICAL DESIGN PHASE	YES	?	NO
IEQ 7.2	1	THERMAL COMFORT	same as above	Install permanent temperature and humidity monitoring system configured to provide control over thermal comfort and effectiveness of dehumidification systems or dehumidification systems.	Install and maintain temperature and humidity monitoring systems for key areas of the building and specify that O&M manuals require quarterly calibration of the sensors.	Provide drawings, specifications and cut sheets for permanent temperature and humidity monitoring system. Include a narrative describing measurement points and	None	MEP & IAQ	No	Easy	\$\$\$	DD, CD's, CA & POE	1		
IEQ 8.1	1	DAYLIGHT AND VIEWS	Provide a connection between indoor spaces and the outdoor environment through the introduction of sunlight and views into the occupied areas of the building.	Achieve Daylight Factor of 2.0 (excluding direct sunlight penetration) in 75% of all space occupied for critical visual tasks, not including copy rooms, storage areas, mechanical, laundry, & other low occupancy support areas. Exceptions include those spaces where the specific tasks would be	Provide daylight and views without glare. Use sunshades, light shelves, window treatments, building footprint, atriums, courtyards, clearstory windows, and skylights to greatest advantage. Avoid direct sunrays into the space.	Provide drawings, a narrative, highlighting critical visual task areas and typical room sections showing shading devices for direct sun control. Include area calculations, daylighting zones, & Daylight factors, OR Include daylight simulation results	None	MEP & Daylighting consultants	Yes	Difficult	Save	SD, CD's, CA & POE	1		
IEQ 8.2	1	DAYLIGHT AND VIEWS	same as above	Direct line of sight to vision glazing from 90% of all regularly occupied spaces - same exceptions as	provide windows with a view to outdoor spaces and light	Provide drawing and a narrative about the direct line of sight zones. Include calculations	None	MEP & Daylighting	Yes	Difficult	none	SD, CD's, CA & POE	1		
<b>SUM</b>	<b>15</b>	<b>Possible</b>										<b>Total IEQ Points</b>	<b>11</b>	<b>4</b>	<b>0</b>

## INNOVATION AND DESIGN PROCESS POINTS

DE 1.1	1	LEED INNOVATION CREDITS	To provide design teams and projects the opportunity to be awarded points for exceptional performance above requirements set by the LEED Green Buildings System and/or innovative performance in Green Building categories not specifically addressed by the	<i>Suggested uses include, but not limited to: responses to regional sustainability issues; unique project types and locations; emerging sustainable design topics and innovations</i>	<i>Reduce design energy cost compared to the energy cost budget for regulated energy components described in ASHRAE/IESNA Standard 90.1-1999, as demonstrated by a whole building simulation using the Energy Cost Budget Method ... by more than 60%</i>	Provide a narrative and supporting documents demonstrating the sustainable benefits of each measure									1			
DE 1.2	1	LEED INNOVATION CREDITS	same as above	same as above	Go beyond IEQ requirements for materials with low emitting properties?	same as above									1			
DE 1.3	1	LEED INNOVATION	same as above	same as above	Add a fuel cell?	same as above									1			
DE 1.4	1	LEED INNOVATION	same as above	same as above	Regional Innovations?	same as above									1			
DE 2.0	1	LEED ACCREDITED PROFESSIONAL	To support and encourage the design interpretation required by a LEED Green Building project and to streamline the	<i>At least one principal participant of the project team that has successfully completed the LEED Accredited Professional exam</i>	Attend a LEED Accredited Professional Training Session and take and pass the LEED Accredited Professional exam.	Leed Accredited Professional Certificate	None	NA	No	Easy	\$\$	Pre-Design	1					
5 Possible													Total Innovation LEED Rating System Points			1	4	0
64 Possible													Total Core LEED Rating System Points			32	26	6
69 Possible													Total LEED Rating System Points			33	30	6

**LEED Certified 26-32**

**LEED Silver 33-38**

**LEED Gold 39-51**

**LEED Platinum 52+**

### Key:

**save** = anticipated initial cost savings  
**none** = no additional premium

**SD** = schematic design  
**DD** = design development

**LA** = Landscape Architect  
**CE** = Civil Engineer

**SE** = Structural Engineer  
**EE** = Electrical Engineer

Elements

Schematic Design 15 June 2001  
DNR Green Office Building

LEED Project Rating 6.6.1

## Elements Project Guide

10/15/2001

to LEED [Leadership in Energy and Environmental Design] Green Building Rating System - Version 2.0 (March 2000)  
by the US Green Building Council

	PTS	CREDITS	INTENT	LEED CREDIT REQUIREMENTS (see LEED v2.0 March 2000)	TECHNOLOGY / STRATEGIES	DOCUMENTATION REQUIREMENTS (see LEED v 2.0 Submittals Summary)	REFERENCED STANDARDS (LEED v 2.0 List of Referenced Standards)	CONSULT ANTS	FORM GIVE P	LEVEL OF DIFFICULTY	\$	CRITICAL DESIGN PHASE	YES	?	NO
				\$ = short term payback (1-2 years) \$\$ = long term payback (2-10 years) \$\$\$ = significant premium	CDs = construction documents CA = construction administration POE = Post occupancy evaluation		MEP = Mechanical, Electrical & Plumbing Engineers IAQ = Indoor Air Quality Expert or Building Scientist NOTE: Critical design phase is bold					ME = Mechanical Engineer			